ENGINEERING EVALUATION
South County Fire Authority, Station #14
PLANT NO. 15093
APPLICATION NO. 6741

BACKGROUND

The South County Fire Authority, Station #14 is applying for an Authority to Construct and/or Permit to Operate the following equipment:

S-1 Emergency Diesel Generator Onan 150DGFA: Cummins Engine 6CTA8.3-G2, 277 HP

The South County Fire Authority is renovating and expanding Station #14 in Belmont, CA. They will replace an older, smaller emergency diesel generator with the S-1 Onan 150DGFA with Cummins 277 HP diesel engine.

EMISSIONS SUMMARY

Annual Emissions:
The 277 HP diesel engine is CARB/EPA approved (engine family number YCEXL050ABA). Emission factors are taken from the '2001 CARB Certified Offroad Heavy Duty Diesel Engine List'. The South County Fire Station is allowed to operate the engine for maintenance and reliability-related activities for 36 hr/yr.

NOx	5.82 g/hp-hr
CO	0.75 g/hp-hr
POC	0.52 g/hp-hr
PM10	0.19 g/hp-hr

The emission factor for SO2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors.

SO2 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.05% S) (454 g/lb) = 0.184 g/hp-hr

NOx = (5.82 g/hp-hr)(277 hp)(36 hrs/yr)(lb/454g) = 127.83 lb/yr = 0.064 TPY
CO = (0.75 g/hp-hr)(277 hp)(36 hrs/yr)(lb/454g) = 16.47 lb/yr = 0.008 TPY
POC = (0.52 g/hp-hr)(277 hp)(36 hrs/yr)(lb/454g) = 11.42 lb/yr = 0.006 TPY
PM10 = (0.19 g/hp-hr)(277 hp)(36 hrs/yr)(lb/454g) = 4.17 lb/yr = 0.002 TPY
SO2 = (0.184 g/hp-hr)(277 hp)(36 hrs/yr)(lb/454g) = 4.04 lb/yr = 0.002 TPY

Maximum Daily Emissions:
A full 24-hour day will be assumed since no daily limits are imposed on intermittent and unexpected operations.

NOx = (5.82 g/hp-hr)(277 hp)(24 hrs/day)(lb/454g) = 85.22 lb/day
CO = (0.75 g/hp-hr)(277 hp)(24 hrs/day)(lb/454g) = 10.98 lb/day
POC = (0.52 g/hp-hr)(277 hp)(24 hrs/day)(lb/454g) = 7.61 lb/day
PM10 = (0.19 g/hp-hr)(277 hp)(24 hrs/day)(lb/454g) = 2.78 lb/day
SO2 = (0.184 g/hp-hr)(277 hp)(24 hrs/day)(lb/454g) = 2.69 lb/day

Plant Cumulative Increase: (tons/year)

Pollutant	Existing	New	Total
NOx	0	0.064	0.064
POC	0	0.006	0.006
CO	0	0.008	0.008
SO2	0	0.002	0.002
PM10	0	0.002	0.002
NPOC	0	0	0

Toxic Risk Screening:

The toxic emission of diesel particulate exceeds the District Risk Screening Trigger and a Risk Screening Analysis has been performed. For 36 hours of operation per year, excluding periods when operation is required due to emergency conditions, the maximum cancer risk is 0.99 in a million and the hazard index is less than one.

Receptor	Cancer Risk in a million	Hazard Index
Residents	0.99	0.0007
Nesbit Elementary School	0.02	0.00008

The level of risk has been determined as acceptable under the risk management policy for diesel-fueled reciprocating engines that do not meet the TBACT requirement (PM10 emissions less than 0.15 g/hp-hr). For engines that do not meet TBACT requirements, the maximum acceptable cancer risk for the project is 1 in a million. (See memo from Toxics Group, January 3, 2002.)

Toxic Pollutant (100 hours)	Emission Rate (lb/yr)	Risk Screening Trigger (lb/yr)
Diesel Exhaust Particulate Matter (PM10)	**4.17**	**0.64**

STATEMENT OF COMPLIANCE

The owner/operator of S-1 shall comply with Reg. 6 (Particulate Matter and Visible Emissions Standards) and Reg. 9-1-301 (Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentrations). Low sulfur diesel (0.05wt%) will be used to meet the sulfur limitation of 0.5wt% in Reg. 9-1-304. Because S-1 is an emergency standby generator, Reg. 9-8-110 (Inorganic Gaseous Pollutants: Nitrogen Oxides from Stationary Gas Turbines) exempts the requirements for emission limits of Sections 9-8-301, 302, and 502. Allowable operating hours and the corresponding record keeping in Reg. 9-8-331 and 530 will be included in the Permit Conditions below.

The project is considered to be ministerial under the District's CEQA regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emissions factors and therefore is not discretionary as defined by CEQA. (Permit Handbook Chapter 2.3)

The project is within 1000 feet from the nearest school and therefore the owner/operator is subject to the public notification requirements of Reg. 2-1-412. A public notice was prepared and sent on *February XX, 2003* to:

All addresses within 1000 feet of the diesel generator
Parents and guardians of students at Nesbit Elementary School

[Insert summary of comments received over the 30-day comment period. Insert summary of the responses given.]

Best Available Control Technology: In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}. Based on the emission calculations above, the owner/operator of S-1 is subject to BACT for the following pollutant: NOx and CO. BACT 1 levels do not apply for 'engines used exclusively for emergency use during involuntary loss of power' as per Reference b, Document 96.1.2 of the BAAQMD BACT Guidelines for IC Engines.

The owner/operator satisfies BACT 2 for NOx, CO, and POC since the engine satisfies the emission factor standards. The owner/operator meets BACT 2 standards for PM10 and SO2 since California Diesel Fuel of <0.05% by weight sulfur will be used.

	Manufacturer's Data	BACT 2
NOx	5.82 g/hp-hr	6.90 g/hp-hr
CO	0.75 g/hp-hr	2.75 g/hp-hr
POC	0.52 g/hp-hr	1.50 g/hp-hr

Offsets: Offsets must be provided for any new or modified source at a facility that emits more than 15 tons/yr of POC or NOx. The District may provide offsets from the Small Facility Banking Account for a facility with emissions between 15 and 50 tons/yr of POC or NOx, provided that facility has no available offsets, and all existing sources of POC and/or NOx are equipped with Best Available Retrofit Control Technology (BARCT). Based on the emission calculations above, offsets are not required for this application.

PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS
Conditions for S-1

1. The owner/operator shall fire S-1 exclusively with diesel fuel with sulfur content no greater than 0.05wt%.
   (basis: Cumulative Increase)

2. The owner/operator shall operate S-1 only under the following circumstances:
   a) For emergency use for an unlimited number of hours.
   b) For reliability-related activities so long as total hours of operation for this purpose do not exceed 36 hours in a calendar year.
   (basis: Reg. 9-8-331, Cumulative Increase, Toxic Risk Screen)

3. Emergency use is defined by the following circumstances:
   a) In the event of loss of regular natural gas supply;
   b) In the event of failure of regular electric power supply;
   c) Flood mitigation;

d) Sewage overflow mitigation;
e) Fire;
f) Failure of a primary motor, but only for such time as needed to repair or replace the primary motor.

(basis: Reg. 9-8-231)

4. Reliability-related activities are defined as either:
   a) Operation of an emergency standby engine to test its ability to perform for an emergency use; or
   b) Operation of an emergency standby engine during maintenance of a primary motor.

   (basis: Reg. 9-8-232)

5. S-1 shall be equipped with a non-resettable totalizing meter that measures hours of operation or fuel usage.
   (basis: Reg. 9-8-530: Record keeping)

6. To determine compliance with the above conditions, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above conditions. A monthly log of usage shall indicate the following:
   a) Hours of operation (total)
   b) Hours of operation (emergency)
   c) For each emergency, the nature of the emergency condition

   The owner/operator shall record all records in a District-approved log. The owner/operator shall retain the records on-site for two years, from the date of entry, and make them available for inspection by District staff upon request. These record-keeping requirements shall not replace the record-keeping requirements contained in any applicable District Regulations.
   (basis: Cumulative Increase, Regulation 1-441, Reg. 9-8-530: Record keeping)

RECOMMENDATION
Waive Authority to Construct and issue a Permit to Operate the South County Fire Authority, Station #14 for the following source:

S-1 Emergency Diesel Generator Onan 150DGFA: Cummins Engine 6CTA8.3-G2, 277 HP

EXEMPTIONS
None.

By:_____
Pamela J. Leong
Air Quality Engineer
January 24, 2003